

The Canadian Entomologist.

VOL. XI.

LONDON, ONT., MAY, 1879.

No. 5

DESCRIPTIONS OF NEW SPECIES OF NORTH AMERICAN BUTTERFLIES; ALSO, NOTES UPON CERTAIN SPECIES.

BY W. H. EDWARDS, COALBURGH, W. VA.

ARGYNNIS HIPPOLYTA.

Male.—Expands 2 inches.

Upper side fulvous, obscured by brown at bases of wings; the discal area of each wing lighter than elsewhere; the black markings rather heavy; the marginal lines more or less confluent; the silver spots of second row indicated on upper side by oblong spots of a pale color.

Under side of primaries pale orange-fulvous at base, and in the P-shaped spot of cell; also along the branches of median; rest of wing pale buff, except hind margin and apical area, which are ferruginous; on the sub-apical patch two silver spots, and the four or five uppermost sub-marginal spots are silvered.

Secondaries deep ferruginous, very little mottled with buff; hind margin same hue as the disk; the belt narrow, buff, much dusted with ferruginous; all the spots well silvered; those of outer row small narrow crescents, with heavy ferruginous edging to upper side; the spots of 2nd and 3rd rows small, each edged on upper side by a few scales of black; a round spot in black ring in cell, an oval in ring below cell; shoulder and inner margin silvered.

Female.—Expands 2.25 inch.

More obscured at base, otherwise like male; the basal area of primaries beneath red-fulvous; secondaries as in male, but the belt is almost lost in ferruginous.

From 3 ♂ 1 ♀ received from Mr. G. M. Dodge, and taken in Oregon, but in what exact locality is not known. Another male was received from Mr. Henry Edwards, from Northern California.

The species equals *Egleis* and *Eurynome* in size, and is distinguished readily by the ferruginous under surface.

ARGYNNIS CHITONE.

Male.—Expands 2.25 inches.

Upper side dull fulvous, much obscured by brown at bases of wings ; both wings edged by two fine parallel lines, between which are fulvous spaces ; the crescent sub-marginal spots and the extra discal rounded spots small ; the other markings rather slight.

Under side of primaries pale yellow-fulvous over basal area and posterior half of wing, the outer upper part of cell and the apical interspaces buff ; the nervules on apical area broadly edged with ferruginous ; the patch same color ; the sub-marginal spots buff, with no silver.

Secondaries light ferruginous, considerably mottled with buff ; the belt clear buff, broad ; hind margin dark brown ; all the spots small and but imperfectly silvered ; the outer row narrow crescents, with ferruginous edging to upper side ; the spots of second row mostly sub-ovate, the first three from costa nearly same size, the fifth a broader oval ; all edged slightly by black on upper side ; those of third row more heavily edged by black ; in cell a round spot in black ring, an oval in ring below ; shoulder and inner margin buff.

Female.—Expands 2.5 inches.

Nearly same shade as male ; the marginal lines more or less confluent on primaries. The spots of under side are sometimes well silvered, or the marginal only are silvered, the remainder buff, with a few silver scales ; in some examples the ground of secondaries is deep ferruginous, encroaching much on the belt, and with very little mottling of buff.

From several examples received from Mr. B. Neumoegen, and taken in Southern Utah and Arizona.

ARGYNNIS NITOCRIS, Edw., ♂ Trans. Am. Ent. Soc., v., p. 15, 1874.

In the male this species is bright red-fulvous, the basal area darkened by brown. In markings it closely follows *Nokomis* male, which it equals in expanse of wing, 3 inches. The under side of primaries is cinnamon red, at apex ochre-yellow ; of secondaries deep ferruginous, with a broad reddish-ochraceous belt ; the spots same size and shape as in *Nokomis*. For a long time the species was known to me by the single male

described, a very fresh and perfect one, taken by Mr. H. W. Henshaw, in Arizona. In 1878, I received from Mr. C. E. Aiken, of Colorado Springs, several lepidoptera taken by him in Arizona; and among them was a second male *Nitocris*, in bad condition, and a female nearly perfect in color. This differs from the male as widely as does the female of *Nokomis* from its male. I give description of it.

NITOCRIS, female. Expands 3 inches.

Upper side blackish brown. Darker than *Nokomis*, the black markings of disk lost in the dark ground; the extra discal spots as in female *Nokomis*, being in transverse rows, and of a pale yellow color, the small submarginal spots whitish; the spots of secondaries narrower than in most examples of *Nokomis*, owing to the broad edging of brown upon each nervule; they are also much dusted with brown, and only on the outer part of the spots opposite the cell is the clear buff ground or pale yellow ground to be seen. Under side of primaries fiery-red over all the wing except the apical area, which is yellow; the sub-apical patch brown, and the nervules on that area are much bordered with brown; on the patch two small silvered spots, and the five or six uppermost marginal spots are small and imperfectly silvered. Secondaries have the ground of an uniform blackish brown, a little dusted by ferruginous next base and along the nervures; the belt yellow, divided into spots by the dark nervules, and the margin of each spot is dusted, so that the clear yellow is seen only in the middle; hind margin nearly black with an indistinct yellow stripe, broken at the nervules; the marginal spots small, silvered, surrounded by a jet black border; the other spots shaped as in the male and silvered.

I have recently received a male *Argynnis* from Dr. Jas. Bailey, of Albany, N. Y., much worn and broken, one of three which were taken at Elko, Nevada, which seems to me to be no other than *Nitocris*. It expands only 2.75 inches, and the limb of each wing is faded out. But the disk retains much of the natural fiery hue, and the markings show that the insect belongs to this sub-group. So also with the markings of the under side. What became of the other two examples taken Dr. Bailey does not know. Apparently the species was much out of its range at Elko.

PAPILIO BAIRDII, Edw., ♂. Proc. Ent. Soc. Phil., vi., p. 200, 1866.

I found the example described in a bottle, with cotton, at the Smithsonian, sent I think by Dr. Palmer. It was badly abraded, and the tails

and antennæ wanting. But the yellow band was unusually well developed, and showed plainly that the species was not *Asterias*. Afterwards by some years both males and females were received among the collections made by the several Wheeler Expeditions, mostly in very bad condition. Recently Mr. Neumoegen sent me several examples of both sexes, some in fresh and beautiful state, and I shall find among them materials for a Plate in But. N. A., Part viii. The males differ much in the discal band, some showing this to be more than twice its breadth in others. In some the spots are close together, forming a continuous band, divided by the nervules only; in others there is a wide black space between the spots. All have these spots fading gradually out on the basal side, instead of being clear cut; and on the outer side, or towards hind margin, nearly all on primaries are concave, sometimes a few straight, and rarely any of them convex. On the under side there is an absence of the fulvous color which characterizes all examples of *Asterias*, there being at most a slight ochreous discoloration on the outer edges of the spots of the band on secondaries, and sometimes this is wholly wanting, or is restricted to the two or three spots against cell. In fresh examples there is a belt of yellow scales on the black area between the marginal and discal spots of primaries, such as is seen in *Machaon*. The female shows only traces of the discal band, sometimes limited to three or four obsolescent spots on the upper part of primaries, or perhaps entirely across primaries. In one example under view these traces continue across secondaries, but in others they are absent. In all, however, there is a large spot of yellow more or less dense on costal margin of secondaries. So the spots of the marginal row on secondaries seem never to be distinct in the female, and often represented by a few scales only. In both sexes there is much variation in the extent of the blue clusters on outer limb of secondaries. In the original example, male, there is no blue except in a crescent over the anal spot; in other males there are slight clusters on the posterior half of the wing, and in others they extend quite across, but gradually diminish in size towards costa. In the female these clusters are larger and more dense, and reach from margin to margin. On the under side the discal band is always distinct on secondaries, and considerably more so on primaries than appears on upper side. There is a little more of the ochreous also on secondaries.

Mr. Strecker, Cat. page 72, has entered this species as *ASTERIAS*, var. e. *UTAHENSIS*, NOB., and puts *Bairdii*, Edw. as a distinct species, but

with the remark that if his recollection is right, *Bairdii* is very near or perhaps same as var. *Asteroides* (his var. d. of *Asterias*.) *Bairdii* and *Asterias* are two distinct and well marked, though allied species, and my description of the former was explicit enough. So far as yet appears, it is restricted to So. Utah and Arizona, but probably will be found in Mexico. *Asterias* is found also in Arizona (as well as Mexico), and I received several examples ♂ ♀ from the Wheeler Expeditions. They do not differ more from the northern form than individuals of a single brood (from one laying of eggs) are found to differ in W. Va. Invariably they are characterized by deep fulvous spots of under side.

P. ASTEROIDES, Reakirt, Pr. Ac. N. Sci., Phil., 1866, p. 43; not Strecker plate vi. fig. 4, and description.

Reakirt described this species thus: "*Marked nearly as in Asterias; the inner yellow macular row (i. e. discal band) upon the fore wings is almost obsolete, except the spot upon the inner margin, which is prolonged into a dash. Hind wings as in Asterias female, but the blue clouds are reduced to small rounded patches; tail not so long as in Asterias. Below, a (discal) row of large fulvous sagittiform spots on fore wings. Secondaries as in Asterias.*" I indicate the important part of this description by italics. The female was not described, and apparently Mr. Reakirt knew only a single male, from Mexico.

Mr. Strecker figures a female but describes both sexes. The male is said to have an inner (discal) band of *eight triangular yellow spots*, and as the contrary is not stated, it is to be inferred that this band is conspicuous, and not obsolete; secondaries a *yellow mesial (discal) band divided into seven parts* (or spots); blue clusters, &c., (which are always found in *Asterias* ♂); beneath the spots of discal band on primaries fulvous; secondaries same; *tails like Asterias. Female has the discal band of primaries a little broader and of same width throughout.* His ♂ ♀ are from Costa Rica. He also says that Reakirt's type ♂ has the spots of discal row of primaries much suffused with black, the last few near costa obsolete or nearly so. Nothing said of the remarkable mention by Reakirt that secondaries are like female *Asterias*, excepting in the size of the blue patches; which means that the discal band and marginal spots are as in *Asterias* female.

Plainly here are two different insects described under one name, and Strecker's *Asteroides* is not at all that of Reakirt. The insect figured as a

female has the markings of a male, something never seen in *Asterias* unless in bi-formed examples, of which for aught I know this may be one. If it is not, a good species is wandering without name. The male is described as characterized by a single row of seven spots on secondaries, the usual (i. e. in *Asterias*) eighth spot at end of cell being absent. Now males of this type are common enough. I have repeatedly raised them at Coalburgh from eggs of the normal *Asterias*, and have them from many localities, even to Costa Rica. But I have never seen such wings attached to a female body.

I have lately received from Mr. F. H. Godman two males from Costa Rica, marked *Asteroides*, one of which answers Reakirt's description very closely. It has the discal band of primaries obsolete, represented only by little clusters of yellow scales, and extending across the wing. On secondaries this band is partly present, there being a small spot on costa, and spots in the four posterior interspaces; but of these last the one in upper median is almost gone. The clusters of blue are small and round, and the tails are shorter than *Asterias* perceptibly. On the under side the spots of discal row are distinct on both wings and as in *Asterias*; also they are fulvous. This is in agreement with Reakirt's type. In *Asterias* female there is often an imperfect row of yellow spots on secondaries, varying in fact from a complete row of distinct but small spots, to nil, except that the costal spot is always present. Therefore, when looking at the male I have described, Reakirt's general comparison to female *Asterias* seems natural. It is in respect of the discal band only, for he calls attention to the smallness of the blue clusters, which is a characteristic of *Asterias* ♂, while in ♀ they are always very large.

The other male from Costa Rica has the discal band on primaries absolutely wanting—not even a scale being there—on both surfaces; the marginal spots of both wings are very small. On secondaries the discal band is represented by a minute cluster of yellow scales on costa and in three posterior interspaces. On the under side this row is complete, but of smaller spots than I ever have seen in *Asterias*, and they are fulvous. The tails are not shorter than in *Asterias*. This absence of the discal band on both sides of primaries is so remarkable that this example may be of a distinct species, especially as there are other points of difference from *Asterias*. But the one I have first described is apparently Reakirt's *Asteroides*, and there is no evidence that it is a variety of *Asterias*. Till such evidence is produced it should be regarded as a good species.

ANTHOCHARIS THOOSA, Scudder, ♀, Hayden, Bull. iv., p. 257, 1878.
Male.—Expands from 1.25 to 1.4 inch.

Upper side white; primaries have a large orange apical patch, limited on basal side by a broad black bar, which extends from costa to inner margin; this is composed in part of the discal bar, which is broader than is usual, but there is no break in its course, and either no narrowing below the cell, or very little; and scarcely any difference in texture, the entire bar being coarse grained with rough edges; the margin from upper to lower end of the patch edged with brown narrowly, with a serration in each interspace. Secondaries have a few black scales on the edge of margin at each nervule; on the anterior half of the wing these become small clusters, but seem never very distinct.

Under side of primaries dusted over the apical area and down hind margin to median with brown scales, on a white ground at apex, but pinkish ground outside the patch; this is restricted, hardly half as large as on upper side, more yellowish; the discal spot confined to arc of cell, with an angular sinus on outer side. Secondaries white, much covered with gray-brown scales (like those of *A. Fulia*) disposed in small clusters mostly, along the nervures and branches; these are connected by intermediate scales near the margin, making a sort of border to the wing.

Female.—Expands 1.4 inch.

Upper side white tinted with lemon yellow, deepest on disk of secondaries; the orange patch narrow; the apical and marginal area brown, enclosing a chain of yellow spots, which on lower part of margin cut through the brown border; the discal spot broad, blackish, arose on outer side, not extending below extremity of arc; on secondaries clusters of scales at ends of all the nervules. Under side scarcely different from male.

From 3 ♂ 1 ♀ sent me by Mr. Neumoegen and taken in Arizona, and 1 ♂ from same region by the Wheeler Expedition.

The single female described by Mr. Scudder was taken at Mokiak Pass, Arizona, "20 miles east of St. George; a pass in mountains between St. George and Juniper Mts., in a very broken and rough volcanic region." Scudder.

ANTHOCHARIS STELLA.

Male.—Expands 1.4 inch.

Upper side delicate lemon-yellow; primaries have a large bright

orange patch limited on inner side by the discal spot and a stripe in line with same, starting from hind margin and narrowing; sometimes this stripe is at first black and dense, but dissolves into separate scales as it nears the discal spot, or it is throughout but a long cluster of scales, becoming obsolete near the spot; this last is a narrow, straight and black bar, clear cut on inner side, but on outer side usually a little incised, widening somewhat on sub-costal and not quite reaching the edge of the margin; apex and hind margin to the stripe narrowly bordered with black, with inner edge serrated; sometimes on the margin this border is broken into spots. Secondaries have small clusters of black scales at the ends of the nervules, sometimes wanting; fringes of primaries yellow, very little orange tinted next the margin, a broad black space at end of each nervule; of secondaries yellow, slightly black at nervules.

Under side pale lemon-yellow; the apical area a little deeper tinted, and pinkish next the patch, all sprinkled with fine spots of grayish-green; the patch restricted, less bright; the discal spot bisected, the upper part being quadrangular, the lower triangular; secondaries have the nervures and branches yellow, just at base orange, or varying from yellow to orange; the surface much covered with little patches of grayish-green, disposed along the nervures, but extending well into the interspaces.

Female.—Expands 1.4 inch.

Deeper colored than the male; the orange patch not more than half the width in male, paler; the border brown, deeply serrated and having on inner side a series of connected yellow spots, serrated without, yellow; at the base of each of these, and partly lying on the orange ground a cluster of brown scales; discal spot as in male; the under side differing from the male only in the depth of yellow.

Mr. Morrison brought examples of this species from Nevada, 1878, and I have seen 12 or 14 of these. I have formerly received the same from Lake Tahoe, and other neighboring localities. Mr. Mead took about a score at Yo Semite, all which were examined by me. The size is that of *Reakirtii* and *Thoosa*. The color unlike either, being lemon-yellow in both sexes, whereas *Reakirtii* is sordid white in both and *Thoosa* white in male. The orange patch is brighter and the limiting band is not continuous nor of uniform density as in both these species. On the under side the color and shape and abundance of the spots on secondaries is nearest *Thoosa*. In *Fulia* these are larger, and cover considerably more

of the surface. *Fulia* is a smaller species than *Stella*, the male clear white. I have a variety of *Stella* taken by Mr. Morrison, in which all the dark markings are faded to the palest ashy-brown tint; the orange is also pale; on the under side the markings are almost obsolete.

MICRO-LEPIDOPTERA.

BY V. T. CHAMBERS, COVINGTON, KY.

LITHOCOLLETIS.

L. argentinotella Clem.

This species varies in color from very pale golden yellow to reddish saffron, and in size from about one-fourth of an inch to about one-third. Likewise as to the size and distinctness of the marginal streaks on the fore wings and as to the dark margins of these streaks. Sometimes only the second dorsal and costal will be dark margined, and these not very distinctly; and sometimes all, including the basal streak, will be distinctly dark margined. I add to Dr. Clemens' description as follows:—The tuft on the vertex is white in the centre, saffron on the sides; abdomen on the upper surface fuscous gray, anal tuft yellowish silvery; under surface and legs silvery white, the anterior surface of the legs marked with brown.

L. triteniaella Cham.

I have a male (bred) in which the second fascia does not reach the dorsal margin by more than one-fourth of the width of the wing. The *al. ex.* ranges from $\frac{1}{4}$ to $\frac{1}{3}$ inch.

L. Bethuneella Cham.

Sometimes the opposite costal and dorsal spots are confluent, forming fasciæ. At least such is the case with some captured specimens which are not otherwise distinguishable from this species, and so also is a single bred specimen received some years ago from Miss Murtfeldt.